

Serial No. 10/063,754

RD-29,414-1

REMARKS

Applicants appreciate the consideration shown by the Office, as evidenced by the Final Office Action mailed on July 1, 2004. In that Office Action, the Examiner rejected Claims 1, 3-12, and 14-27. As such, Claims 1, 3-12, and 14-27 remain in the case with none of the claims being allowed.

The July 1 Office Action has been carefully considered. After such consideration, Claims 1, 12, and 19 have been amended and a Request for Continued Examination is submitted herewith. Applicants respectfully request reconsideration of the application by the Examiner in light of the above amendments and the following remarks offered in response to the July 1 Office Action.

Claims 1, 3-12, and 14-27 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hansen et al. (U.S. Patent 5,976,247) in view of Baumler et al. (U.S. Patent 4,102,666) and in further view of JP 63-236722 (JP '722).

Applicants submit that independent Claim 12 has been amended to claim an outer coating for a body comprising fused quartz, in which the outer coating catalyzes a transition of fused quartz within the bulk of the body to a cristobalite crystal structure. Applicants also submit that independent Claims 1 and 19 have each been amended to claim a quartz article having an outer coating that catalyzes a transition of fused quartz within the bulk of the body of the quartz article to a cristobalite crystal structure. Support for the amendments is found in paragraph [0016], page 5, of the Specification.

Applicants respectfully submit that, in order to establish a prima facie case of obviousness, the combination of references must teach or suggest all of the claim limitations of the present invention. Accordingly, Applicants submit that the combination of Hansen et al., Baumler et al., and JP '722, as proposed by the Examiner, does not teach a quartz article – or, in Claim 12, a body comprising fused quartz – in which the outer coating catalyzes a transition of fused quartz within the bulk of the body to a cristobalite crystal structure, as claimed in amended independent Claims 1, 12, and 19.

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Applicants submit that none of the references, either separately or in combination with each other, teach or suggest an outer coating that catalyzes a transition of fused quartz within the bulk of the fused quartz body to a cristobalite crystal structure. Instead, as noted by the Examiner in pages 2-3 of the July 1 Office Action, Hansen et al., Baumler et al., and JP '722 each teach the formation of a coating or surface layer having a cristobalite structure. As taught by each of these references, the conversion of the fused quartz to the cristobalite structure is limited to a thin surface layer of the article. Applicants further submit that, because Hansen et al., Baumler et al., and JP '722 teach formation of a thin coating or surface layer having a cristobalite structure, the combined references teach *away* from the formation of the cristobalite structure within the bulk of the fused quartz body.

In the July 1 Office Action, the Examiner states that JP'722 discloses a coating containing a dopant that diffuses homogeneously into the glass to induce the transformation of quartz into cristobalite. Applicants submit that JP'722, in the Abstract, does not teach a dopant that diffuses homogeneously into the *bulk* of the quartz body, but instead teaches "diffusion of Al atoms in the *surface* of the tube (*emphasis added*)."

The Examiner further states that, because Hansen et al. and Baumler et al. use coatings containing dopants that are also contained in the solution of JP'722, the dopants of Hansen et al. and Baumler et al. would also diffuse to a certain point to change the underlying quartz substrate into cristobalite. Applicants submit that none the references cited provide any support for this assertion. None of the references teach or suggest that the dopants would diffuse beyond the surface layer. All three references teach the conversion of the fused quartz to the cristobalite structure is limited to a thin surface layer of the article. Accordingly, Applicants hereby request the Examiner come forth with evidence supporting her position.

Regarding the Examiner's assertion that, based on JP'722, the dopants of Hansen et al. and Baumler et al. would diffuse, Applicants further submit that JP'722 teaches a surface layer comprising dopants having a low diffusion coefficient. See the Abstract of the reference. Since the dopants have low diffusion coefficients, it is unlikely that any diffusion of dopants – and the resulting cristobalite transformation of the quartz body – would occur. Assuming *arguendo* that the dopants having a low diffusion coefficient would diffuse, the extent of diffusion would be

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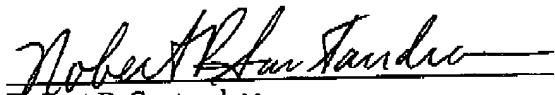
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minimal, and any transformation of the underlying quartz to cristobalite would, would be limited to the interface between the coating and the quartz body – *not* the bulk of the quartz body.

Applicants therefore submit that, because the combination of references neither teaches nor suggests an outer coating that catalyzes a transition of fused quartz within the bulk of the fused quartz body to a cristobalite crystal structure, the rejection of Claims 1, 3-12, and 14-27 under 35 U.S.C. §103(a) as being unpatentable over Hansen et al. in view of Baumler et al. and in further view of JP '722 is successfully overcome.

In light of the amendment and remarks presented herein, Applicants submit that the case is in condition for immediate allowance and respectfully requests such action. If, however, any issues remain unresolved, the Examiner is invited to telephone the Applicants' counsel at the number provided below.

Respectfully submitted,



Robert P. Santandrea
Counsel for Applicants
Registration No. 45,072
Telephone: (518) 387-6304

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